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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/625,071	07/25/2000	Shahram Mostafazadeh	NS-3877-2D US	7795
22434	7590	10/27/2003	EXAMINER	
BEYER WEAVER & THOMAS LLP			CLARK, SHEILA V	
P.O. BOX 778			ART UNIT	
BERKELEY, CA 94704-0778			PAPER NUMBER	

2815

DATE MAILED: 10/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.  
09/625,071

Applicant(s)  
Mostafazadeh et al

Examiner  
Sheila V. Clark

Art Unit  
2815



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Aug 5, 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 11-13, 15-33, and 38-44 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-13, 15-33, and 38-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on Jan 13, 2000 is: a) ☒ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_ 6) ☐ Other:

Art Unit: 2815

In view of the decision to rescind the new matter issue in lieu of applicants declaration and arguments of record and to render a new ground of rejection , PROSECUTION IS HEREBY REOPENED. set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

- (1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,
- (2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by Yamaguchi .

Yamaguchi shows a lead frame panel having an array of devices shown in figure 6. A lead frame 10 and die attach pad 10a are shown in figure 3B. Planar conductive leads 10b are shown

Art Unit: 2815

positioned around the outer periphery of the pad ( see figure 3a). Figure 3b shows the leads having a lower surface that is substantially coplanar with the lower surface of said pad. Bond wires 12 are shown coupling the conductive leads to a corresponding pad on die 11 and a plastic encapsulation 13 is shown enclosing die 11, bond wires and the lead frame whereby the lower surfaces of the leads and pad are shown exposed from the encapsulation. Said encapsulation covering a array of devices is shown in figure 6.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi in view of Mostafazadeh et al.

The features of the claims from which claim 12 depend have been addressed supra except for the solder ball attachment recited in claim 12.

Mostafazadeh et al shows solder balls attached to the exposed unencapsulated surfaces of lead frames. It would have been therefore obvious to one having ordinary skill in this art to attach the solder balls shown by Mostafazadeh et al to the exposed lead frame surfaces of a similar lead frame of Yamaguchi because interconnections such as solder balls are routinely attached to such surfaces to allow for connections to external devices such as printed circuit boards, other chips or other structures.

Art Unit: 2815

positioned around the outer periphery of the pad ( see figure 3a). Figure 3b shows the leads having a lower surface that is substantially coplanar with the lower surface of said pad. Bond wires 12 are shown coupling the conductive leads to a corresponding pad on die 11 and a plastic encapsulation 13 is shown enclosing die 11, bond wires and the lead frame whereby the lower surfaces of the leads and pad are shown exposed from the encapsulation. Said encapsulation covering a array of devices is shown in figure 6.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi in view of Mostafazadeh et al.

The features of the claims from which claim 12 depend have been addressed supra except for the solder ball attachment recited in claim 12.

Mostafazadeh et al shows solder balls attached to the exposed unencapsulated surfaces of lead frames. It would have been therefore obvious to one having ordinary skill in this art to attach the solder balls shown by Mostafazadeh et al to the exposed lead frame surfaces of a similar lead frame of Yamaguchi because interconnections such as solder balls are routinely attached to such surfaces to allow for connections to external devices such as printed circuit boards, other chips or other structures.

Art Unit: 2815

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 13, 15 rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Lin et al.

Lin et al shows in for example figures 3 and 9 a conductive lead frame 13 formed on transfer film 12. Die attach pad 13 is shown supporting die 15 and conductive leads 13 are shown positioned around said pad. Each of the leads are shown having a lower surface that is coplanar with the lower surface of the die attach pad. A plurality of bond wires 18 are shown coupling the leads to the corresponding bond pad on the die. A plastic encapsulation 22 is shown enclosing the die and bond wires exposing a lower surface of the die attach pad and leads. An adhesive pad 12 is shown removably attached to the IC package covering the lower surface of the pad and leads. The two dimensional array of encapsulated die attach pads are shown in figure 9 and whereby said adhesive pad supports the plurality of packages. Lead frame 13 is metal.

Art Unit: 2815

Although Lin et al fails to specifically use the term “lead frame” to describe his invention. The panel lead device formed of metal, and having an array of leads surrounding a die pad and formed with connecting bar attachments shown in figure 9 represents features characteristic of what is known in this technology as a lead frame (though it has not been termed as such) and is therefore obviously deemed as such.

The claims such contain method of making characteristics ( i.e prior to singulation, fabricated ) given no patentable weight in determining the final device structure.

Note that a “product by process” claim is directed to the product per se, no matter how actually made, In re Hirao 190 USPQ 15 at 17(footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessman, 180 USPQ 324; In re Avery, 186 USPQ 161 and In re Marosi et al, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in “product by process” claims, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in “product by process” claims or not.

Claims 16, 17 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Lin et al.

Lin et al shows in for example figures 3 and 9 a conductive lead frame 13 formed on transfer film 12. Die attach pad 13 is shown supporting die 15 and conductive leads 13 are shown positioned around said pad. Each of the leads are shown having a lower surface that is coplanar with the lower surface of the die attach pad. A plurality of bond wires 18 are shown coupling the leads to the corresponding bond pad on the die. A plastic encapsulation 22 is shown enclosing the die and bond wires exposing a lower surface of the die attach pad and leads. An adhesive pad 12

Art Unit: 2815

is shown removably attached to the IC package covering the lower surface of the pad and leads. The two dimensional array of encapsulated die attach pads are shown in figure 9 and whereby said adhesive pad supports the plurality of packages. Lead frame 13 is metal.

Although Lin et al fails to specifically use the term "lead frame" to describe his invention. The panel lead device formed of metal, and having an array of leads surrounding a die pad and formed with connecting bar attachments as is shown in figure 9 shows the features characteristic of what is known in this technology as a lead frame (though it has not been termed as such) and is therefore obviously deemed as such.

Lin et al shows in figure 9 an array of dam bars (un labelled) attached to said leads and allowing the encapsulant material of each package to be isolated from another. Lin et al also shows in figure 9 the rectangular pattern array.

The claims such contain method of making characteristics ( i.e fabricated simultaneously, prior to singulation, fabricated, sawing) given no patentable weight in determining the final device structure.

Note that a "product by process" claim is directed to the product per se, no matter how actually made, In re Hirao 190 USPQ 15 at 17(footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessman, 180 USPQ 324; In re Avery, 186 USPQ 161 and In re Marosi et al, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in "product by process" claims, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not.



Art Unit: 2815

Claims 18-20, 22-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamaguchi .

Yamaguchi shows a lead frame panel having a matrix of dam or tie bars 56 ( see figure 6d) extending in row and columns and encircling a die pad and formed with trenches. An array of devices shown in figure 6. A lead frame 10 and die attach pad 10a are shown in figure 3b and the multiplicity shown in figure 6. Planar conductive leads 10b are shown positioned around the outer periphery of the pad ( see figure 3a). Figure 3b shows the leads having a lower surface that is substantially coplanar with the lower surface of said pad. Bond wires 12 are shown coupling the conductive leads to a corresponding pad on die 11 and a plastic encapsulation 13 is shown enclosing die 11, bond wires and the lead frame whereby the lower surfaces of the leads and pad are shown exposed from the encapsulation. Said encapsulation covering a array of devices is shown in figure 6c. Figure 3B shows the leads and pads to be substantially the same thickness.

Claims 18-33 are are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Lin et al.

Lin et al shows in figure 9 an matrix array of dam or tie bars 56 (see figure 9-unlabeled) formed in rows and columns attached to leads 13 and allowing the encapsulant material of each package to be isolated from another. Lin et al also shows in forger 9 the rectangular pattern array

Lin et al shows in for example figures 3 and 9 a conductive lead frame 13 formed on transfer film 12. Die attach pad 13 is shown supporting die 15 and conductive leads 13 are shown

Art Unit: 2815

positioned around said pad. Each of the leads are shown having a lower surface that is coplanar with the lower surface of the die attach pad. A plurality of bond wires 18 are shown coupling the leads to the corresponding bond pad on the die. A plastic encapsulation 22 or molded cap is shown enclosing the die and bond wires exposing a lower surface of the die attach pad and leads. An adhesive pad 12 is shown removably attached to the IC package covering the lower surface of the pad and leads. The two dimensional array of encapsulated die attach pads are shown in figure 9 and whereby said adhesive pad supports the plurality of packages. Lead frame 13 is metal.

Although Lin et al fails to specifically use the term "lead frame" to describe his invention. The panel lead device formed of metal, and having an array of leads surrounding a die pad and formed with connecting bar attachments as is shown in figure 9 shows the features characteristic of what is known in this technology as a lead frame (though it has not been termed as such) and is therefore obviously deemed as such.

Lin et al also discussed singulation into separate devices and figure 1 shows the pad and leads to be formed of the same thicknesses.

The claims such contain method of making characteristics ( i.e fabricated simultaneously, prior to singulation, fabricated, sawing) given no patentable weight in determining the final device structure.

Note that a "product by process" claim is directed to the product per se, no matter how actually made, In re Hirao 190

USPQ 15 at 17(footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessman, 180 USPQ 324; In re Avery, 186 USPQ 161 and In re Marosi et al, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be

Art Unit: 2815

determined in "product by process" claims, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not.

Claims 38-44 are are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Lin et al.

Lin et al shows in figure 9 an matrix array of dam or tie bars (un labelled) formed in rows and columns attached to said leads and allowing the encapsulant material of each package to be isolated from another. Lin et al also shows in forger 9 the rectangular pattern array

Lin et al shows in for example figures 3 and 9 a conductive lead frame 13 formed on transfer film 12. Die attach pad 13 is shown supporting die 15 and conductive leads 13 are shown positioned around said pad. Each of the leads are shown having a lower surface that is coplanar with the lower surface of the die attach pad. A plurality of bond wires 18 are shown coupling the leads to the corresponding bond pad on the die. A plastic encapsulation 22 or molded cap is shown enclosing the die and bond wires exposing a lower surface of the die attach pad and leads. An adhesive pad 12 is shown removably attached to the IC package covering the lower surface of the pad and leads. The two dimensional array of encapsulated die attach pads are shown in figure 9 and whereby said adhesive pad supports the plurality of packages. Lead frame 13 is metal.

Although Lin et al fails to specifically use the term "lead frame" to describe his invention. The panel lead device formed of metal, and having an array of leads surrounding a die pad and formed with connecting bar attachments as is shown in figure 9 shows the features characteristic

Art Unit: 2815

of what is known in this technology as a lead frame (though it has not been termed as such) and is therefore obviously deemed as such.

Lin et al shows in figure 9 an matrix array of dam or tie bars (un labelled) formed in rows and columns attached to said leads and allowing the encapsulant material of each package to be isolated from another. Lin et al also shows in forger 9 the rectangular pattern array

Lin et al also discussed singulation into separate devices and figure 1 shows the pad and leads to be formed of the same thicknesses.

The claims such contain method of making characteristics ( i.e fabricated simultaneously, prior to singulation, fabricated, sawing) given no patentable weight in determining the final device structure.

Note that a "product by process" claim is directed to the product per se, no matter how actually made, In re Hirao 190 USPQ 15 at 17(footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessman, 180 USPQ 324; In re Avery, 186 USPQ 161 and In re Marosi et al, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in "product by process" claims, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not.

Claims 11-13, 15-33, 38-44 are rejected.

Kikuchi et al, Fan et al, Shih et al, Takata et al are cited to show lead frames with leads formed along side die pad with bottom surfaces exposed from a resin.

Art Unit: 2815

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner S.V. Clark whose telephone number is (703) 308-4924.

The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7722 or 7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

October 20, 2003

SHEILA V. CLARK  
PRIMARY EXAMINER

*Tom Thomas*  
TOM THOMAS  
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